

Name: _____

Date: _____

Algebra 2 CC: Rationalizing a Denominator

To rationalize the denominator of a fraction means to write the fraction as an equivalent fraction with a denominator that is a rational number.

How do we write the fraction $\frac{3}{2 + \sqrt{6}}$ in simplest form, that is, with a rational denominator? To do so, we must multiply numerator and denominator of the fraction by some numerical expression that will make the denominator a rational number.

Developing Skills

In 3–38, rationalize the denominator and write each fraction in simplest form. All variables represent positive numbers.

3. $\frac{1}{\sqrt{3}}$

4. $\frac{5}{\sqrt{10}}$

5. $\frac{4}{\sqrt{2}}$

6. $\frac{4}{2\sqrt{3}}$

7. $\frac{15}{5\sqrt{3}}$

8. $\frac{4}{8\sqrt{6}}$

9. $\frac{12}{\sqrt{27}}$

10. $\frac{6}{\sqrt{12}}$

11. $\frac{8}{\sqrt{24}}$

12. $\frac{2\sqrt{2}}{4\sqrt{3}}$

13. $\frac{5\sqrt{5}}{15\sqrt{2}}$

14. $\frac{\sqrt{24}}{2\sqrt{6}}$

15. $\frac{1}{3 + \sqrt{5}}$

16. $\frac{1}{5 - \sqrt{2}}$

17. $\frac{1}{1 + \sqrt{3}}$

18. $\frac{4}{3 - \sqrt{3}}$

19. $\frac{3}{1 + \sqrt{5}}$

20. $\frac{4}{4 + \sqrt{7}}$

21. $\frac{3}{\sqrt{5} - 2}$

22. $\frac{9}{\sqrt{7} + 2}$

23. $\frac{\sqrt{2}}{2 - \sqrt{2}}$

24. $\frac{6}{3 + \sqrt{3}}$

25. $\frac{\sqrt{5x}}{\sqrt{5x} - 2}$

26. $\frac{\sqrt{20y}}{y\sqrt{5} + 1}$

27. $\frac{2 + \sqrt{2}}{3 - \sqrt{2}}$

28. $\frac{6 - \sqrt{7}}{4 - \sqrt{7}}$

29. $\frac{\sqrt{10} - 1}{\sqrt{10} + 1}$

30. $\frac{7 + \sqrt{5}}{7 - \sqrt{5}}$

31. $\frac{a + 2}{b - \sqrt{2}}$

32. $\frac{2\sqrt{x} - 5\sqrt{y}}{\sqrt{x} + \sqrt{y}}$

33. $\frac{4}{\sqrt{z} + 8}$

34. $\frac{\sqrt{a}}{\sqrt{a} - 2}$

35. $\frac{2}{\sqrt{x}} + \frac{2}{\sqrt{y}}$

36. $\frac{1}{\sqrt{x} + 6} - \frac{2}{\sqrt{6}}$

37. $\frac{2\sqrt{a}}{\sqrt{b}} + \frac{2\sqrt{b}}{\sqrt{a}}$

38. $\frac{3}{x + \sqrt{2}} + \frac{5}{\sqrt{x}}$